of the aisle like to use that as a bogeyman for us and imply that that means socialized medicine, and that we want to implement this single-payer system that is going to be government top-down health care.

There are ways to expand access to health care to large populations, to almost everybody who is uninsured, and then we only have to work hard towards ensuring that last phase of the population. We can expand access to health care for all children by expanding the SCHIP program. We can expand access to health care to more older Americans by simply expanding the Medicare program and letting people from 50 to 64 years old buy into that program. Those are bills that were filed when we were in the minority and that will be filed again and that we will have an opportunity to able to pursue now that we are past the 100-hour agenda. So just you having come just out of the State legislature and being a health care expert, I would just love to hear your thoughts about that.

Mr. MURPHY of Connecticut. Ms. WASSERMAN SCHULTZ, you are exactly right. I remember standing at a supermarket in my district during the campaign or maybe a few years before, and a woman who was, I think, 59, 58 years old, who had been laid off, and who understandably was having trouble finding new employment. It is difficult for older Americans to find a new job, especially one that has a comprehensive package of benefits. And she looked at me with this blank face and said, ''Why am I in this position? Why can I not get health care when I know the Medicare program is right there? I am willing to pay for it. I am willing to contribute to it. And yet I can't get access to this program simply because I have been put into a situation where I can't find a job or I can't find a job with benefits, and I don't qualify for the program.''

So there are ways that we can help, as you said, those older Americans who are on the cusp of being able to qualify for Medicare, and certainly the millions of children around this country who have no health care insurance and end up getting sick. I mean, they get sick, and they come into our emergency rooms to get the care they need. Mr. RYAN said here the other night, we do have a system of universal coverage in this country; unfortunately, it is in our emergency rooms rather than in our doctors' offices and our primary care doctors' offices.

And maybe just to tie this back to what we were talking about before when it comes to the war in Iraq. You know, we have an obligation to our veterans when they come back, and what we have done here over the past 10 years to the health care system for veterans is a travesty of justice to the brave men and women who have fought for this country.

I absolutely support moving towards universal coverage. I think you are right, it doesn't have to be done all at once. In fact, I think the best proposals before this body are to really take some commonsense approaches to it. But maybe the first thing we should do is start to repair some of the damage that we did to the veterans health care system to make sure that when you volunteer to serve this country abroad, that when you come back, you are going to get the mental health care that you need, that you are going to not have to wait in line for a surgery that you badly need. Maybe that is our first obligation is to take care of those folks, because in the end we are here to serve everyone, but we are certainly here to make sure that those people that fight for us, Mr. MEEK, are taken care of. And I would yield to you.

□ 1645

Mr. MEEK of Florida. All I am going to do is do a close. I know we have the Web site and all, but I want to yield to Ms. WASSERMAN SCHULTZ because I want to tell you, I am not from Connecticut, but if I was one of your constituents, I would vote for you. You are good. That is all I can say.

Mr. MURPHY of Connecticut. We had another member of the Florida delegation. I am honored to be part of the 30-something group, but to be part of the Florida delegation here today was just as impressive.

Mr. MEEK of Florida. I was just saying if I was your constituent I would vote for you. It is good to have a Member of Congress that is as well informed into the issues that are facing the constituents and the American people. I yield to Ms. WASSERMAN SCHULTZ because we are going to be closing out soon.

Ms. WASSERMAN SCHULTZ. Thank you so much. One of the things that I think is important for the Members and other folks to know is we did this 30-something hour night after night in the minority for the last several years, and we want folks to know that we are not just shutting down and becoming complacent and resting on our laurels now that we are in the majority because there continues to be a need for accountability, as the State of the Union address demonstrated last night.

We are going to assert Congress's oversight role, reestablish the system of checks and balances that was totally absent the last number of years. We are going to use the 30-something Working Group forum to be able to do that and also talk about what Democrats are going to do, implement our agenda, talk about the priorities of the American people.

I am so thrilled that we have expanded our ranks and that we have an opportunity to interact and dialogue with you. I can tell you that on election night on November 7, I was cheering very loud that you were coming to join us in the 110th.

Mr. Speaker, I am going to yield to Mr. MURPHY and he is going to give the Web site out and we will be ready to shut down.

Mr. MURPHY of Connecticut. Thank you very much. As I said before, coming back from the campaign trail I got to watch the three of you down here, and I think stole a lot of your material. So I am glad to maybe provide a little bit of material for the next crop of 30-somethings.

May I do Mr. RYAN's job today?

Ms. WASSERMAN SCHULTZ. Please.

Mr. MURPHY of Connecticut. And give out the Web site for the 30-something Working Group: www.speaker.gov/30something. If you go there, you will get all the good information that we talked about today and participate online in the discussion that we have been having here.

Mr. MEEK of Florida. Well, it is an honor to be on the floor with Mr. MURPHY and also Ms. WASSERMAN SCHULTZ. Being in the majority brings about responsibility for all of us. So we have a lot to do. And Mr. Speaker, we want to thank the Democratic leadership, from the Speaker to the leader to the whip to the chair and the vice chair for allowing us to have this Special Order on the Democratic side. It was an honor addressing the House once again.

FURTHER MESSAGE FROM THE SENATE

A further message from the Senate by Ms. Curtis, one if its clerks, announced that the Senate has passed a bill of the following title in which the concurrence of the House is requested:

S. 1. An act to provide greater transparency in the legislative process.

ENERGY

The SPEAKER pro tempore (Mr. JOHNSON of Georgia). Under the Speaker's announced policy of January 18, 2007, the gentleman from Maryland (Mr. BARTLETT) is recognized for 60 minutes as the designee of the minority leader.

Mr. BARTLETT of Maryland. Mr. Speaker, I thought that there was only one speech given in the last century that would become very famous in the few years just ahead of us, and that was the speech given on the 8th day of March in San Antonio, Texas, by M. King Hubbert in 1956, but I just discovered a few days ago a speech which I think may become just about as famous.

This was a speech that was given by the father of the nuclear submarine, Hyman Rickover, and he gave this speech in May 1957. So soon we will reach the 50th anniversary of this very famous speech by the father of the nuclear submarine.

I just wanted to start by reading a couple of things from this speech that he gave. He gave the speech, by the way, to a group of physicians at a banquet of the Annual Scientific Assembly of the Minnesota State Medical Association in St. Paul, Minnesota, May 14, 1957.

The title of the speech had nothing to do with medicine. The title of the speech is ''Energy Resources and Our Future.'' He says early on in the speech that, ''With high energy consumption goes a high standard of living. Thus the enormous fossil fuel energy which we in this country control feeds machines which make each of us master of an army of mechanical slaves.'' Now, this was 50 years ago and can you imagine what has happened since then?

''Man's muscle power is rated at 35 watts continuously,'' that is, 24/7. Of course, you need to sleep and eat and so forth, and so when you are working, you are working at more than 35 watts, but 35 watts continuously, which is one-twentieth of horsepower.

''Machines therefore furnish every American industrial worker with energy equivalent to that of 244 men.'' So all of those things that we enjoy in our life, the automobile, the refrigerator, the microwave, all of these represent the equivalent of 244 men in place of just the one that can turn these things out with the aid of this fossil fuel energy.

Then he goes on to say, ''While at least 2,000 men push his automobile along the road,'' probably more than that for an SUV, ''and his family is supplied with 33 faithful household helpers. Each locomotive engineer controls energy equivalent to that of 100,000 men; each jet pilot of 700,000 men. Truly,'' he says, ''the humblest American enjoys the services of more slaves than were once owned by the richest nobles, and lives better than most ancient kings. In retrospect, and despite wars, revolutions, and disasters, the hundred years just gone by,'' that was the 100 years up to 1957, it is now 150 years, ''just gone by may well seem like a Golden Age.''

Others have commented on this incredible energy density in these fossil fuels by noting that just one barrel of oil contains the energy equivalent of 12 men working all year. If you look at the cost of that at the pump, that is roughly $10 a year. For $10 a year, you can have a servant work for you all year long. You may have some trouble getting your mind around that, but imagine how far that gallon of gasoline or diesel fuel, still cheaper, by the way, than water in the grocery store, how far that takes your SUV or your car or your truck and how long it would take you to pull your SUV or truck or car the distance that that gallon of diesel fuel or gasoline takes it. I drive a Prius. We get about 50 miles per gallon. How long would it take me to pull my Prius 50 miles?

Let me give another little example to help you understand the incredible energy density in these fossil fuels and how much they have improved our life and how totally dependent we are on them.

If a big man goes outside and is working really hard all day long doing physical work, I can get more work out of an electric motor for less than 25 cents' worth of electricity. That may be humbling to recognize that in terms of fossil fuel energy, our muscle power is worth less than 25 cents a day, but understanding that helps us to understand how totally dependent we have come to be on these fossil fuels.

A little later in his speech, Hyman Rickover said, ''I think no further elaboration is needed to demonstrate the significance of energy resources for our own future. Our civilization rests upon a technological base which requires enormous quantities of fossil fuels. What assurance do we then have that our energy needs will continue to be supplied by fossil fuels?'' And then this answer, 50 years ago, when we were king of oil, biggest producers, biggest consumers in the world, I think biggest exporters in the world, ''The answer is,'' he says, ''in the long run, none.''

There is no assurance that we can have these fossil fuels for the long term. ''The earth is finite,'' he says. ''Fossil fuels are not renewable. In this respect our energy base differs from that of all earlier civilizations. They could have maintained their energy supply by careful cultivation,'' when we got our energy from the soil. ''We cannot. Fuel that has been burned is gone forever. Fuel is even more evanescent than metals. Metals, too, are nonrenewable resources threatened with ultimate extinction, but something can be salvaged from scrap. Fuel leaves no scrap and there is nothing man can do to rebuild exhausted fossil fuel reserves. They were created by solar energy,'' he says, ''500 million years ago and took eons to grow to their present volume.''

Another quote from his talk. ''In the 8,000 years from the beginning of history to the year 2000 A.D., world population will have grown from 10 million to 4 billion.'' Actually, he missed it a little. It is now 7 billion, as you will see in a moment, ''with 90 percent of that growth taking place during the last 5 percent of that period, in 400 years. It took the first 3,000 years of recorded history to accomplish the first doubling of population, 100 years for the last doubling, but the next doubling will require only 50 years.'' As a matter of fact, it required less than that, because today we have about nearly 7 billion people in the world rather than just 4 billion.

Another quote from his talk. ''High-energy consumption has always been a prerequisite of political power . . . Ultimately,'' he says, ''the Nation which controls the largest energy resources will become dominant. If we give thought to the problem of energy resources, if we act wisely and in time to conserve what we have and prepare well for necessary future changes, we shall insure this dominant position for our own country.''

Have we done that? In no way have we done that.

Another quote from his talk. ''I suggest that this is a good time to think soberly about our responsibilities to our descendants, those who will ring out the Fossil Fuel Age . . . We might even, if we wanted, give a break to these youngsters by cutting fuel and metal consumption,'' this was 50 years ago, ''by cutting fuel and metal consumption a little here and there so as to provide a safer margin for the necessary adjustments which eventually must be made in a world without fossil fuels.''

I just came back about 3 weeks ago from a trip to China. Nine Members of Congress went. We met with a number of the top officials in China, and I was pleased and surprised. We went to talk about energy primarily, and they began every discussion of energy by talking about post-oil. Hyman Rickover 50 years ago understood that one day we would be talking about post-oil. The Chinese now are talking about post-oil. By the way, they do not mean that there is not going to be anymore oil in the world. Nobody is telling you that.

What they mean by post-oil is that it will be post the peak production of oil, where we can no longer produce additional oil so we are going to have to make do with what we have. As a matter of fact, each year after that there would be less and less oil available for us to use.

The next chart. There is nothing man can do to rebuild exhausted fossil fuel reserves, and this is part of the quote I just made. They were created by solar energy a very long time ago and took eons to grow into their present volume. In the face of the basic factor, fossil fuel reserves are finite. The exact length of time these reserves will last is important in only one respect. The longer they last, the more time do we have to invent ways of living off renewable substitute energy sources and to adjust our economy to the vast changes which we can expect from such a shift. This is 50 years ago.

□ 1700

He is saying the same thing that our President said last night in the State of the Union message, that we should get busy with preparing for a transition from fossil fuels to renewables.

Then I really love this quote. I am a father of 10, a grandfather of 15 and a great-grandfather of two. ''Fossil fuels resemble capital in the bank. A prudent and responsible parent will use his capital sparingly in order to pass on to his children as much as possible of his inheritance.''

Do you think, Mr. Speaker, that we have been using fossil fuel energy sparingly? I doubt that you would find very much concurrence for this anywhere in this country, and certainly worldwide. When you look from other places to this country and see this one person out of 22 using 25 percent of all of the world's energy, you will have nobody over there saying we have used our energy sparingly. ''A selfish and irresponsible parent will squander it in riotous living and care not one whit how his offspring will fair.''

I have characterized our relationship with energy as the equivalent of the pig who found the feed room door open and just went in and pigged out. That is what we have been doing. When our children and our grandchildren and great grandchildren look back in a world with diminishing fossil fuel availability, and, by the way, saddled with a huge debt that we are passing on to them, they may well ask themselves the question, how could they have done it?

When we found this incredible wealth under the ground, that provides the equivalent of 33 servants, 100,000 people pushing your train, 244 people pushing your automobile down the road, when we found this incredible fuel fossil fuel energy under the ground, why didn't somebody stop and ask the question, what should we do with this to provide the most good for the most people for the longest time? That clearly is not what we did.

What we did was to extract this oil from the ground as quickly as possible; to use it as prolifically as possible; to develop a lifestyle ever more and more dependent on fossil fuel; to develop an agriculture where one person out of 50 feeds the rest and much of the world; where the man sits on top of a 150 horsepower tractor and uses fertilizers produced from natural gas to grow his crops.

The next chart here is a really interesting one. Suppose the size of the countries in the world was determined by how much oil they have. This is the world according to oil. If you look at our military might, if you look at our economic might, we are really big. But when you look at the oil we have, here we are, itty-bitty United States. Notice Alaska is pretty big here, a fair amount of oil up there.

But look at Saudi Arabia, Iraq, Kuwait. Little Kuwait. Look at a map and see how little Kuwait is. But look at the oil they have. This is what the world would like look like if the countries were sized relative to the amount of oil they have.

Look at Russia there. People talk about the huge reserves in Russia. It is dwarfed by Saudi Arabia and Iraq, and even little Kuwait has more oil than Russia. Look at Venezuela down here. It is probably twice the size of the United States in terms of what they have in oil. Look at some of the African countries here. Nigeria, what, way bigger than the United States. Libya, bigger than the United States in terms of the amount of oil that they have.

The next chart, this was predicted by that second famous speech that I mentioned that was given in the last century, and that is the talk given by M. King Hubbard on the 8th day of March, 1956, to a group of petroleum engineers in San Antonio, Texas, and a lot of other oilmen there. This was the time, you remember, when the United States was the biggest oil producer in the world, the biggest consumer of oil in the world, and I think maybe the biggest exporter of oil in the world.

What M. King Hubbard told hose assembled people was that in just about 14 years, the United States would reach its maximum oil production and then, no matter what we did, the oil production would drop off after that.

How did he know that that was going to happen? He had watched the exploitation and exhaustion of individual oil fields, and each one of them followed what we call a bell curve. That is a curve that goes ever up and up and reaches a peak and comes down the other side. You get a bell curve if you weigh people and see how much they weigh. There will be a few very light people, a few very heavy people. Most of them are in the middle. How tall people are, how many mice are in a litter of mice and so forth, most of the things in a natural world follow a bell curve. He predicted that we would follow a bell curve.

When he noticed each one of these little fields, he saw when they reached a peak, they had pumped about half of all the oil they would ever pump. So he theorized if he knew how many little fields we had, little bell curves, and how many more we were likely to find, and if you added all those up, you could predict when we would reach the peak. So he did that, and he said that was going to be about 1970.

And the Shell Oil Company, for whom he worked, said, please don't do that and embarrass us. You make a fool of yourself and embarrass yourself. He gave the talk and for a while he was kind of a humorous person. But then he became an icon in his own time, because right on schedule in 1970, we peaked in oil production.

Now, this curve that I have here is one that is taken from the Cambridge Energy Research Associates, and I use this especially because you may hear from these people, they are called CERA, and they are predicting that there is lots more oil out there, we are going to find a whole lot more oil, not to worry. They use this to make the point that M. King Hubbard really didn't know what he was talking about and he really was wrong.

They are saying that because the total U.S. production, and this, by the way, is with Prudo Bay and the Gulf of Mexico in, if you put only the lower 48 in, which is what M. King Hubbard was predicting, this was the actual on the green, and his prediction was the yellow here, and they said, gee, he was off. That doesn't look like it is very far off to me.

Let's look at another chart which shows the same data. This shows two peaks here. The smooth green symbols here are the prediction of M. King Hubbard. The more ragged ones are the actual data points.

You see right on schedule we peaked in 1970. We have been going down ever since. The red one is the former Soviet Union, FSU, and they kind of fell apart and didn't reach their potential. They are having a second little peak now and are going down.

Do you remember from that chart of the world according to oil, they were maybe twice the United States? They aren't using anywhere near as much oil as we are, so now they are a major exporter. But they don't have all that much oil. As you can see here, the area under this curve represents how much oil they have, the area under this curve represents how much oil we have, and you can see the general relationships there.

The next chart shows where our oil has come from. M. King Hubbard predicted only Texas and the rest of the United States, and that was his prediction and that was the actual data points. Then we found oil in Alaska and we learned to make oil from gas, non-gas liquids, natural gas liquids.

This is the oil that we found in the Gulf of Mexico. You remember those fabled discoveries in the Gulf of Mexico? I remember them. We were home free. They were going to solve our oil problem for the foreseeable future. You can hardly see their contributions as we slid down the other side of Hubbard's peak.

The next chart shows another depiction of peak oil, and this is one again from Energy Information Area, the EIA, quoted in the Hirsch Report. Let me spend a moment on what the Hirsch Report is.

Our government has paid for two big studies of the fossil fuel energy situation. One of those was financed by the Department of Energy, done by SAIC, a very prestigious, large scientific organization, and Dr. Hirsch was the principal investigator there, so it is frequently referred to as the Hirsch Report. He here is reporting this information that came from our Energy Information Agency, which is a part of our Department of Energy.

Here they are using some very interesting statistical terms, but they aren't true statistical term. I have had the EIA people come in and talk with them at the office about this, because I had some trouble understanding it.

A couple of Congresses ago, I was the Chair of the Energy Subcommittee on Science and I wanted to determine the dimensions of the problem. So we had experts come in from around the world to tell us how much oil they thought remained in the world and how much more oil they thought we would find.

I was quite surprised at the relative unanimity. They all were pretty close to 1,000 gigabarrels, maybe 970 to 1,040. Now, I use gigabarrels instead of million barrels and that is because the British billion is not our billion. The British billion is a million million. Our billion is a thousand million. But everybody understands a giga. So when you hear ''giga'' used, you know that is an international term. A thousand gigabarrels, which is 1 trillion barrels of oil, that is what remains.

You remember at the peak of that curve, M. King Hubbard said about half of the oil would be used, so that means we have used about 1,000 gigabarrels, and here they have the total of 2,248 gigabarrels. So about half of that has been used and about half of that remains.

Now, they are using some very interesting techniques here, and they did some simulations, and I have no idea what the inputs were into the simulations, but they have convinced themselves that there is a high probability that we will find twice as much more oil as all the oil that now exists out there unpumped. So they said gee, halfway between what they say is the low probability and the high probability is the mean, which is the expected yield. So they believe we are going to get, this is a total of 3,000, so we are going to get another 2,000 gigabarrels of oil. That is this red curve here.

What they show is that even if that is true, Mr. Speaker, even if that is true, and I think the odds that that is true are very small, but even if that is true, that pushes the peak out only to 2016.

What the dotted curve here shows is what you might be able to do with enhanced oil recovery, pump live steam down there and a bunch of solvents and push water in there, and maybe you can get it quicker. But if you get it quicker look what happens to the other side. Just a demonstration that you can't pump what is not there, and the total volume you will pump is the area under this curve. If you get it sooner, you won't have it later. Notice how quickly that curve drops down.

If they don't find the additional enormous quantities of oil that they believe they will find, then we are about here and the peak will occur at about 2005 or so, which is where M. King Hubbard said that the peak would occur. By the way, he predicted it in 1969, a year before the United States peak. He was confident enough of his analytical techniques that he predicted the world would be peaking about now.

The next chart is another chart from CERA, and it depicts some of the same information on that chart a little differently.

This is the curve, the peaking curve, if there is a roughly 2 trillion, 2000 gigabarrels. You will notice slightly different figures between these, because there is not unanimity on how much is there, but it is roughly 1.9 to 2.2. This is in the same ballpark. If that is the case, then peaking according to them is going to occur fairly soon according to them.

But if you find another 1 trillion barrels of oil, that pushes peaking out only to what, 2035, something like that. That is not all that far off. And the probability we are going to find that oil is very, very small, as we will see in a few moments.

Now he has piled on top of that, CERA has piled on top of that, an enormous amount of oil that they think we are going to get from unconventional oil sources. This is like the Canadian tar sands and like our oil shales out in the West.

We may or may not get enormous quantities of oil from that. There are potentially huge quantities there. There is more potential oil in the tar sands of Canada than all of the known reserves in the world. That big map we saw, there is more potential oil there.

But there is also an incredible amount of potential energy in the tides, but we have not been very successful in harnessing that energy from the tides. Canada is now getting about 1 million barrels of oil with a shovel that lifts 100 tons and dumps it into a truck that hauls 400 tons. They then haul it and cook it with enormous amounts of energy from natural gas, which is stranded. By ''stranded'' we mean there are not very many people there to use it.

□ 1715

Since it is expensive to ship, why, it is cheaper there, and so they are producing that oil at about 18 to 25 dollars a barrel. I understand they are getting 55, today, dollars a barrel for it. That is a pretty good dollar profit ratio. But they know this is not sustainable for several reasons. One is they are using water faster than they can supply it. The energy from the gas will run out. They are thinking of building a nuclear power plant, and they have a huge, relatively huge, lake there of tailing water they call it. It is really very toxic water, so there are huge environmental impacts of it. And furthermore, this vein of the tar sands will shortly duck under an overlay so that they will no longer be able to deadlift it or surface mine it, whatever you want to call it. They will now have to develop it in situ, and they have not even experimented with how they are going to do that.

The next chart has a little simple schematic. And by the way, you can make this peak look very hard and sharp or spread it out by the scale you use on the abscissa and the ordinate. Here we have spread it out because we have an expanded scale on the abscissa and a restricted one on the ordinate here. But that yellow area represents the additional oil we would like to have, because growth is exponential at about 2 percent. And if we reach the peak, I think we are about here. We are now having some problems with meeting the demand, which is why oil is going from 50 to 60 to 78 at the highest a few months ago.

And by the way, they showed undulating plateau in that last big chart I showed, and I agree with them. May I put that chart up for just another moment? That is a very interesting one. I want to focus on this. They are saying that there is no such thing as peak oil. And this is what they show. Tell me that is not a peak. This is from their publication. And it is an article where they are kind of pooh-poohing the idea of peak oil, and they are showing peak oil. For every potential level of oil that they think will be there, they are showing a peak. They are just showing it, and I agree with them that it is going to be undulating plateau. It is not going to be a smooth thing. The curve just under it shows it very smooth because we have simplified it. And what it shows is, and, by the way, the 2 percent growth, it doubles in 35 years. This point is doubled this point, so that is a 35-year period there. So you see it takes a while to get through that peak.

The next chart is one that if you had only one chart to look at and talk about relative to oil, this would be the chart. And you could spend a very long time looking at this chart and talking about it. The big bars here show the discoveries. And you notice that there was a rash of discoveries way back in the 1940s, 16 years before M. King Hubbert made his prediction. By the way, he made that prediction here in 1956, about here. Wow. Look how much more we discovered after that. And he was able to predict how much more we would discover and correctly predict when we would reach peak oil production.

The solid line here shows the consumption. And obviously up until about 1980 we were always finding more than we were consuming. Now, remember, underneath this curve represents all that we have used. So we have used this much of what we found. But this much of what we found was left over that we could use in the future. So ever since 1980, now, we have been finding less and less oil and using more and more oil. Notice a little stuttering here in the 1970s. The Arab oil embargo. The oil price spike hikes, the big push for efficiency in our country. Your air conditioner now uses about half the energy that it used in 1970.

Well, what will the future look like? The folks who put this chart together believe that peaking will occur at about 2010. Who knows? We really won't know until after it has peaked and you look back and see the data. It could be peaking now. It could be 5 years from now, it could be 10 years from now. But both of these are very, very short term in terms of what we need to do to address this.

What will the future look like? They have predicted that future oil discoveries will follow, and of course they won't be smooth like that, but on the average they will follow the curve like that. And you can't pump what you haven't found. And if you were to put a smooth curve over this discovery curve, and you have an area under that which will equal the amount which will be the total amount of oil you have found, that is adding up all these little bars here, and the area under that discovery curve cannot be different than the area ultimately under the consumption curve. So you can make this curve go, within limits, any way you want, within reason. You can use vigorous enhanced oil recovery techniques and get it out quicker, and you can maybe delay the peak a little bit. But you can't pump what is not there. And so it ultimately is going to fall off much, much faster. This is a very interesting chart. We could spend a lot of time looking at this. But what you cannot do is pump oil that you have not found.

Now, what CERA is predicting is that you are going to find as much more oil as all of the reserves that now exist. The reserves that exist, and I calculated this, I think that this area pretty much fills in this. So the reserve that exists is this. They think we are going to find that much more oil? What do you think when you look at this chart? Do you think it is reasonable that they are going to find that much more oil?

Mr. Speaker, this is a chart which kind of smooths out those big different bar graphs that we saw before. Now, as early finds in the 19, here, they have a little spike here and a big spike here. You can smooth that whole thing out, of course. But this is roughly a graph drawn through the bar graphs on that previous chart. And now we are down here at this point in time. And the Energy Information Agency, using those three numbers that we used before, the 95 percent, which they say is low, the 50 percent, which they say is the mean, and the 5 percent, which they say is high, and they think that because the 50 percentile is halfway between the 95 and the 5, that that is the most likely thing. Well, anybody in statistics knows that if it is 95 percent more probable, it is more probable than 50 percent probable. That is pretty simple to understand, I think.

Well, the red dots here indicate what the actual data have been. Now, their projection was that this discovery line would follow the green. Clearly it has been following what you would expect it to follow, the 95 percent probability.

The next chart is an interesting one, and Hyman Rickover referred to this. He referred to 8,000 years of recorded history. And he, at that time, noted that they were about 100 years into the age of oil. Today we are about 150 years into the age of oil. And ultimately, out of 8,000 years of recorded history, the age of oil will be but a blip in the history of man. It will occupy maybe 300 years from when we first found it and started to really exploit it until it becomes so difficult to get and so expensive that we won't be getting much of it again.

This is a little chart that shows the development of the industrial revolution. It started with wood. Brown, here. The hills of New England were denuded carrying charcoal to England to make steel there. Come up to Frederick County where I live, and we have a little historic site up there, Catoctin Furnace. We denuded the hills up there where Camp David is now to make charcoal to make steel at Catoctin Furnace.

Then we discovered coal. And on the ordinate here, it is a quadrillion Btus, how much energy we were producing. Look how much more energy we were able to produce with coal. The coal locomotive. Lots more energy in coal than there is in wood, so we could do a lot more things with.

The industrial revolution was kind of stuttering when we discovered gas and oil, and then look what happened. And if you could superimpose on this a chart of the population growth in the world, it would look just about like this. Remember Hyman Rickover said that it was going to grow from that half billion back here to 4 billion? It really grew to almost 7 billion, which is where we are today. So that population curve with appropriate dimensions would just about follow exactly the energy use curve. This is an incredible amount of energy we are using that obviously could not continue.

A really interesting statistic. Up until the Carter years, every decade, the world used as much oil as it had used in all of previous history. That is this curve. Now, in the 1970s you see what happened. We really had a shock, and we stopped and took some sense of where we were. And we drove smaller cars, and we developed more efficient refrigerators and air conditioners, and we reduced energy. We had a big recession, a big worldwide recession as a result of that. So energy use went down.

But now look. It is climbing back up again. Three hundred years, the age of oil, it will be but a blip in the history of man.

Again, I ask, what will future people think when they look back at this and say, why didn't we stop when we found this incredible wealth under the ground to ask what could we do with this to get the most good for the most people for the longer time? That is obviously the question that almost nobody asked. What we asked was, how can we use more and more of this to improve more and more our quality of life, as if it were forever. Obviously, as Hyman Rickover said 50 years ago, it can't be forever.

The next chart is a really interesting one. As I mentioned, we are 1 person out of 22, and we use a fourth of the world's energy. Energy use is on the abscissa here, and how good you feel about life is on the ordinate. And notice that we are way out there. We feel pretty good about life, but not as good as many others. We are just here. There are all of those who feel better about life. And we clearly are using the most energy. Only little Switzerland comes close to us in using energy.

Interesting chart here. If you could draw a line through this, you would see that with little energy it is really tough to feel good about life. But when you come up here to what, a fifth of the amount of energy we use, a lot of people, Colombia, Brazil, Mexico, China, they feel about as good about life as we do. If you look at the countries in Europe here, you will find that many of those use about half the energy we use, and they feel just as good about life as we feel.

What this points out is that it is possible to live a quality life using much less energy than we use, and all you have to do is to look at these countries that use very much less energy than we do and feel just about as good, and some of them better. All of these above my arm here feel better about life than we feel about life. And they are using less energy than we are using.

Well, what now? Well, obviously, we must transition. Geology will assure it, as anticipated by Hyman Rickover in that very fascinating speech to the physicians 50 years ago. We will transition ultimately as we go through the age of oil from the fossil fuels to renewables. We have available to us some finite sources, and I mentioned the tar sands, and we have about as large a potential supply of energy in our West called the oil shales, a little bit different. They aren't really oil. You put a solvent in, they won't flow out. But if you cook them, they will turn to oil, and you can then refine it. And there is potentially a huge amount of energy there. But can we get it?

The Shell Oil Company has gone there doing some experimentation. And a year or so ago I was a speaker out in Denver, Colorado, at the American chapter of the Peak Oil Association. And the investigator for the Shell Oil Company that conducted this little experiment was there and reported on it. And what he said in his report there was very different than the stories you read in the papers. The stories in the papers said, you know, don't worry about energy. We have this huge potential amount there, and we have found a way to get it. That is not what he said.

Let me tell you what they did. What they did was, and I am not sure of the reasoning because I hear two reasons for it. One was that there was an aquifer there they didn't want to contaminate. And the other had something to do with the mechanics of sequestering the oil. But they drilled a series of holes around the periphery, and then they froze the ground, and they froze it for a year so that now they had, in effect, a frozen vessel.

The second argument was that they did that to contain the heat. That is a little hard for me to understand how a frozen vessel contains heat, but that is the argument that I was given. Then at the end of the year they went in and drilled a second set of holes, and then they pumped heat down there, and they cooked it for a year. And then they drilled a third set of holes, and then when they got to the bottom of those holes, they turned it sideways, which they can do now, and drilled it horizontally. So the oil that was loosened by cooking it in the second set of wells they drilled now flowed down through the shale and was picked up by those horizontal channels from the third set of wells they drilled. And they pumped for several years a really meaningful amount of oil from that. So there is potentially a lot of oil there.

□ 1730

But what the investigator told us was that it would be, I think he said, something like 2013 before they could even decide whether it was economically feasible to develop those fields.

So there is huge potential there. There are also huge challenges there. But it is energy. We will develop some of it. But it is finite. It will not last forever either. And there is going to be enormous cost in developing it, both economic cost and environmental costs.

Now, you can trade the environmental cost for economic cost. If you do not mind polluting the environment you can develop it for less money. At the moment, most of us believe we should not be polluting our environment so we spend the money necessary that we do not, although they are not really doing that in Alberta, Canada. They are using up precious water, and they have a relatively huge lake of tailing water as they call it, which is really pretty toxic stuff.

Coal. We and China have a lot of coal. China was suffocating themselves with coal smoke. They closed down some of their coal-fired power plants. People will tell you that we have 500 years of coal. That is just not true. It is true that we have 250 years of coal at current use rates. We will put the next chart up in front of this one.

Be very careful when people tell you we have so much of something at current use rates. When Albert Einstein was asked what the next big force in the universe was going to be after nuclear energy, which had such a dramatic increase over any kind of energy we had before that, his answer was, compound interest, he said was the most powerful force in the universe.

And there is a really interesting talk given, he is not my relative, I wish he were so I had some of his genes, but Dr. Albert Bartlett, Professor Emeritus at the University of Colorado has given a talk on energy I think some 1,600 times. Just do Albert Bartlett and energy and you will pull it up. It was the most fascinating 1-hour talk I ever listened to, and I am sure you will agree.

But he says that the biggest failure of our industrialized society is our inability to understand the exponential function. You see this coal that will last us 250 years at current use rates if we increase its use only 2 percent, and we will have to do better than that. By the way, coal has been in the past a big source of gas and oil.

Hitler ran his whole country and his whole military on it. And when we were limiting the opportunities for trade in South Africa, they were making gas and oil from coal. When I was a little boy, it was coal oil. And I thought it was all one word, coal oil that replaced whale oil in the lamps. I kept calling it coal oil a long time after they were getting it from kerosene rather than coal.

But if you increase it just 2 percent, that shrinks its usable duration to about 85 years. But obviously for many of our uses you cannot use coal, you have got to use it as a gas or liquid. If you use some of the energy from the coal to make it into a gas or liquid you have now shrunk it to 50 years.

But the reality is that it does not matter who owns the resource today, it is all traded in a global marketplace. And the guy who has the dollars buys the oil or the gas. And so whether we like it or not, there is no alternative that we are going to share our oil with the world. Because, you see if we use oil from our coal, that just frees up some oil from pumping it out of the ground that somebody else can use.

So the effect is as if we were sharing our oil with the world so that 50 years from now, we use a fourth, you remember the rest of the world uses the other three-fourths, that means that now shrinks to 12½ years. So that marvelous 200 years of coal at no growth for us now shrinks to 50 years when we increase its growth to only 2 percent, and use some of it, the energy, to convert it to gas and oil. And then we realize that we are going to have to share this, no alternative, unless we have a big enough Navy to say, it is ours and we can keep you from coming and getting it. We are going to have to share it with the world so now it lasts 12½ years.

Let's go back to this chart. Going just for a few moments about nuclear. If you were in France, you would get about 80, 85 percent of all of your electricity from nuclear. We get in our country 20 percent of our electricity from nuclear, that is a lot. When you go home tonight look out your window, and every fifth business and every fifth house would be dark if it were not for nuclear energy.

We have never had an accident. We have never had a fatality. Three Mile Island, it behaved just as it was supposed to behave. I lived within the radiation zone of that. And we contained that. That was not a disaster. It was just a demonstration that we were building them right, because when we had the meltdown at Three Mile Island we contained that. There was little effect from it.

There are three different ways you can get nuclear energy. One is the way we get it from lightwater reactors. That uses fissionable uranium. There is a finite supply of fissionable uranium in the world.

And I get wildly divergent estimates of how long it will last, 15 years, 100 years. Again, this is at that current use rate. So you have to ask the person, what rate of use are you assuming when you make this projection? This reminds me, by the way, that we need an honest broker to help us agree on the facts.

It is hard to have a rational discussion when you cannot agree on the facts. And I think the right candidate to do this is the National Academy of Sciences. Enormously respected, very competent. And I have talked with them, and they would be interested in doing this. We just need to fund them so they can do it.

We need to have a rational discussion of this. And we cannot have that when there is big differences of opinion as to what the facts are.

Well, ultimately one day sooner or later, there will not be enough fissionable uranium to go to lightwater reactors. So then we are going to have to go to the second type of fission reactors, that is the breeder reactor. France already uses those. The only ones we had we used for making weapons. We now do not do that anymore. They have problems.

The big advantage, of course, is they are what the name implies, they are breeder reactors, they make more fuel that they use. The problems are that they have a byproduct that we must store away for a quarter of a million years. I cannot even imagine that. A quarter of a million years.

I think there is a challenge here. Anything that is so hot that has no much energy in it that I cannot get near it for a quarter of a million years, don't you think ought to have enough energy there that we can do something meaningful with it?

Now we have been profligate in our use of energy, all energy including nuclear energy. And we use only a tiny fraction of the nuclear energy in the isotope when we say it is no longer good for our reactors, so we put some more in. But I think there is a big challenge there. I think there is a potential source of energy from these byproducts. If it is so hot, such high radiation that I cannot get near it for a quarter of a million years, it ought to have some usable energy in it. We have very creative, innovative people. I think that we can find that if we realize that we need to.

The third type of nuclear energy is the type that is represented in the sun and every other star out there in the Milky Way. The sun is a nuclear reactor. And it is fusion reaction, it is like our hydrogen bomb. By the way, it will one day run down too. But that will be in millions of years in the future, so in our context we do not need to think about that.

We have been spending money on fusion, about $250 million a year. We are always about 30 years away from a solution. I gladly would vote for the money that we spend there. I think that we have got to do that. If we can conquer the enormous engineering challenges then we are home free. That is the only energy source out there that can take the place of fossil fuels. But I think the odds of doing that are about the same as the odds of winning the lottery. And if you are satisfied that you are going to meet your financial obligations by playing the lottery, then you are probably satisfied that we are going to meet our energy needs with nuclear fusion. Please do not bet the ranch on it.

Well, once we have gone through these finite sources and we have done what we can with nuclear, I have friends that have been devoutly antinuclear, but they are very bright people. And when they are looking at a very probable alternative, that is, shivering in the dark, not enough energy to keep warm, not enough energy to run the lights, nuclear does not look all that bad to many people who before were not enthusiastic about it when the alternative might be shivering in the dark.

Well, then we have renewable resources. And as Dr. Rickover said, by and by, we will have transitioned to these renewable resources. There will come a day when the fossil fuels are so scarce, so hard to get, so expensive, that we are getting little or none of them. And we will have, by that time, have transitioned, like it or not, we will have transitioned to these renewables. What are they? There is the sun. As I look at what the sun does, I am not surprised that the ancients worshiped the sun.

Almost all of the energy that we have been talking about here came from the sun. It was the sun that permitted the organic materials to grow in those subtropical seas that existed. The Earth, a long time ago, was much warmer than the Earth today. They were up there in the North Shore of Alaska, and in the North Sea off England producing these organic materials that settled to the bottom, infiltrated by runoff from the adjacent hills, probably. This is all theory. As good an explanation as I have heard as to how it got there. Tectonic moved. It opened up. It sank down. Near enough, proper pressure, proper heat, enough time, and by and by it becomes gas and oil, with a dome over so the gas cannot escape.

Then you have a good field. You get gas from it. You get oil from it. And if you drill into the oil and seal off the gas, the gas pressure above is putting pressure on the oil, so you have a gusher, it just pushes it up the pipe. So you see that this is the way it was formed. We have an explanation for what we find when we drill out there.

So all of the gas and oil came from the sun. When I was a little boy, we had a coal furnace. And we had run a mined coal from dust to big lumps, and some lumps so big that you could not put them in the furnace. And there was a sledgehammer by the wall, and we would break the lumps so we could get them in the furnace.

I remember as a little kid the feelings that I had, and I still get a chill when I think of this. I would break open the lump of that coal and there would be a fern leaf. You did not have to tell me where the coal came from. I knew where the coal came from. It came from ancient vegetation that grew and fell over and was covered up and ultimately became coal. We can see this process in the making in England, of the bogs there, it is not coal yet but you can take it out and burn it.

Wind. The wind blows because the sun shines. It is differential heating of the Earth that makes the wind blow.

Here is one that is not due to the sun. This is geothermal. True geothermal, not tying your heat pump to groundwater or earth, which makes a whole lot more sense than trying to coal the winter air and heat the summer air, which is what your radiational air conditioner and heat system, heat pump does.

But this is tapping into the heat from the molten core of the Earth. You go to Iceland, there is not a single chimney because they have a lot of geothermal, that is where they get their energy.

Ocean energy. Except for the tides, all of ocean energy is really a secondhand sun energy. It is the sun which differentially heats the waters. It is the sun which produces ultimately the Gulf Stream and the Japanese current, which carries so much warmth to northern Europe. Look at England on a globe. You will see that England is about mid-Canada, that is certainly not their climate, that is because of what the sun does in heating that water and setting up this conveyor belt.

The tides, of course, are produced by the Moon. There a lot of potential energy there. And then a very popular potential source of energy today, the President talked about it last night in his State of the Union, energy sources from agriculture.

Hyman Rickover in his speech here talked about that. And he said that ultimately, if you are getting energy from agriculture, you are going to be competing with one of two things, either you compete with food, and today corn is over $4 a barrel, it is ordinarily about $2 a barrel so that our dairy farmers and chicken farmers and hog farmers are now having a hard time making ends meet, because corn has about doubled in price, and that is because using corn for ethanol is competing with corn for food.

If we all became vegetarians, by the way, we would all have a whole lot more corn to use for energy. Soy diesel, biodiesel, these are all attractive sources. The second potential source of energy from agriculture was biomass. And the President talked a lot about that last night.

But Hyman Rickover very astutely noted that today's crops grow because last year's crops died and are fertilizing them. He noted that you will need to return the biomass to the soils if you are going to keep productivity going.

□ 1745

Now, we can get some energy from ethanol, and we can get some energy from biomass by burning it or fermenting it, but there are limits as to how much we can get there. And the incredible amount of energy that we use from fossil fuels presents a huge challenge to try to find enough disparate sources of energy to add up to equal the energy that we get there.

Waste energy, that is an interesting one, and we ought to be doing more of that. It is a very good idea. But remember, that big pile of waste that you see at the city dump is the result of profligate use of energy. In an energy-deficient world, we are not going to have those huge piles of waste. That is really secondhand use of fossil fuels because that is how the waste got there.

Hydrogen. Hydrogen is not an energy source. We must make hydrogen. The second law of thermal dynamics says you will always get less energy out of hydrogen than it took to make it. So why are we talking about hydrogen? For two reasons. One, when you burn it, it is really clean. You get water.

Secondly, if we ever get an economically feasible fuel cell, hydrogen is a great candidate for the fuel cell. But minus a good fuel cell, there will not be a viable hydrogen economy because you will always get less energy out of hydrogen than it took to make it. If you are simply burning the hydrogen, you could have gotten more energy by burning the gas from which you got the electricity which you used to split the water to get hydrogen.

So that is why there is such a focus on fuel cells, because it opens up the promise of a really clean fuel with at least twice the efficiency of the reciprocating engine.

The next chart, and I would like to talk about this one in terms of a young couple whose grandparents have died and left them a big inheritance, and they have now established a life-style. Hyman Rickover described that life-style with 33 servants, or the equivalent. They have established a life-style where 85 percent of the money they spend comes from their grandparents' inheritance, and only 15 percent comes from their income. It is not going to last long enough for them to retire. They have to do something. They have to spend less money or make more money.

That is exactly where we are energywise. Eighty-five percent of our energy comes from fossil fuels: coal, petroleum, natural gas. Only 15 percent comes from other sources, and a bit more than half of that comes from nuclear. That could grow, and probably should grow. And that leaves 7 percent, and this is in 2000. We are a little better today than we were in 2000, but the challenges are huge. Even with 30 percent growth, when you are going from 0.07 percent, in 2000 that is the contribution that solar made to our energy supply. It is minuscule. And the noise level.

We are doing much better today, and it is growing rapidly, but it is still a tiny fraction of the energy we use.

Notice wood here, more than a third of all of the renewables. That is the timber industry and the paper industry wisely using a by-product.

Waste to energy we talked about.

Wind is just another way to use sun energy.

Conventional hydro, we have maxed out on that. We can maybe get some microhydro. We have about maxed out on that.

The next chart, briefly, what do we need to do. We need a program, if we are going to have a relatively smooth ride, and we have waited too long to address this problem, but we need a program that has the total commitment of World War II, that has the technology focus of putting a man on the moon, and has the urgency of the Manhattan Project.

We need a vigorous conservation time to buy time, free up some energy, buy some time, use it wisely, invest it in those things that will do the most good for the most people. We could become a major exporter. We have a very innovative society. We have a farm bill that is challenging our farmers. And if a farm can't be energy independent, we have big problems because that is where a lot of energy could be produced.

This is challenging our farm people to develop a farm where they produce twice as much energy as they use so there is some for the city person.

Mr. Speaker, www.bartlett.house.gov will get you access to all of this material.

Mr. Speaker, I submit into the CONGRESSIONAL RECORD the entire speech "Energy Resources and Our Future," by Admiral Hyman Rickover, Chief, Naval Reactors Branch, Division of Reactor Development, U.S. Atomic Energy Commission and Assistant Chief of the Bureau of Ships for Nuclear Propulsion, Navy Department, prepared for delivery at a Banquet of the Annual Scientific Assembly of the Minnesota State Medical Association, St. Paul, Minnesota on May 14, 1957.

ENERGY RESOURCES AND OUR FUTURE

I am honored to be here tonight, though it is no easy thing, I assure you, for a layman to face up to an audience of physicians. A single one of you, sitting behind his desk, can be quite formidable.

My speech has no medical connotations. This may be a relief to you after the solid professional fare you have been absorbing. I should like to discuss a matter which will, I hope, be of interest to you as responsible citizens: the significance of energy resources in the shaping of our future.

We live in what historians may some day call the Fossil Fuel Age. Today coal, oil, and natural gas supply 93% of the world's energy; water power accounts for only 1%; and the labor of men and domestic animals the remaining 6%. This is a startling reversal of corresponding figures for 1850—only a century ago. Then fossil fuels supplied 5% of the world's energy, and men and animals 94%. Five sixths of all the coal, oil, and gas consumed since the beginning of the Fossil Fuel Age has been burned up in the last 55 years.

These fuels have been known to man for more than 3,000 years. In parts of China, coal was used for domestic heating and cooking, and natural gas for lighting as early as 1000 B.C. The Babylonians burned asphalt a thousand years earlier. But these early uses were sporadic and of no economic significance. Fossil fuels did not become a major source of energy until machines running on coal, gas, or oil were invented. Wood, for example, was the most important fuel until 1880 when it was replaced by coal; coal, in turn, has only recently been surpassed by oil in this country.

Once in full swing, fossil fuel consumption has accelerated at phenomenal rates. All the fossil fuels used before 1900 would not last five years at today's rates of consumption.

Nowhere are these rates higher and growing faster than in the United States. Our country, with only 6% of the world's population, uses one third of the world's total energy input; this proportion would be even greater except that we use energy more efficiently than other countries. Each American has at his disposal, each year, energy equivalent to that obtainable from eight tons of coal. This is six times the world's per capita energy consumption. Though not quite so spectacular, corresponding figures for other highly industrialized countries also show above average consumption figures. The United Kingdom, for example, uses more than three times as much energy as the world average.

With high energy consumption goes a high standard of living. Thus the enormous fossil energy which we in this country control feeds machines which make each of us master of an army of mechanical slaves. Man's muscle power is rated at 35 watts continuously, or one-twentieth horsepower. Machines therefore furnish every American industrial worker with energy equivalent to that of 244 men, while at least 2,000 men push his automobile along the road, and his family is supplied with 33 faithful household helpers. Each locomotive engineer controls energy equivalent to that of 100,000 men; each jet pilot of 700,000 men. Truly, the humblest American enjoys the services of more slaves than were once owned by the richest nobles, and lives better than most ancient kings. In retrospect, and despite wars, revolutions, and disasters, the hundred years just gone by may well seem like a Golden Age.

Whether this Golden Age will continue depends entirely upon our ability to keep energy supplies in balance with the needs of our growing population. Before I go into this question, let me review briefly the role of energy resources in the rise and fall of civilizations.

Possession of surplus energy is, of course, a requisite for any kind of civilization, for if man possesses merely the energy of his own muscles, he must expend all his strength—mental and physical—to obtain the bare necessities of life.

Surplus energy provides the material foundation for civilized living—a comfortable and tasteful home instead of a bare shelter; attractive clothing instead of mere covering to keep warm; appetizing food instead of anything that suffices to appease hunger. It provides the freedom from toil without which there can be no art, music, literature, or learning. There is no need to belabor the point. What lifted man—one of the weaker mammals—above the animal world was that he could devise, with his brain, ways to increase the energy at his disposal, and use the leisure so gained to cultivate his mind and spirit. Where man must rely solely on the energy of his own body, he can sustain only the most meager existence.

Man's first step on the ladder of civilization dates from his discovery of fire and his domestication of animals. With these energy resources he was able to build a pastoral culture. To move upward to an agricultural civilization he needed more energy. In the past this was found in the labor of dependent members of large patriarchal families, augmented by slaves obtained through purchase or as war booty. There are some backward communities which to this day depend on this type of energy.

Slave labor was necessary for the city-states and the empires of antiquity; they frequently had slave populations larger than their free citizenry. As long as slaves were abundant and no moral censure attached to their ownership, incentives to search for alternative sources of energy were lacking; this may well have been the single most important reason why engineering advanced very little in ancient times.

A reduction of per capita energy consumption has always in the past led to a decline in civilization and a reversion to a more primitive way of life. For example, exhaustion of wood fuel is believed to have been the primary reason for the fall of the Mayan Civilization on this continent and of the decline of once flourishing civilizations in Asia. India and China once had large forests, as did much of the Middle East. Deforestation not only lessened the energy base but had a further disastrous effect: lacking plant cover, soil washed away, and with soil erosion the nutritional base was reduced as well.

Another cause of declining civilization comes with pressure of population on available land. A point is reached where the land can no longer support both the people and their domestic animals. Horses and mules disappear first. Finally even the versatile water buffalo is displaced by man who is two and one half times as efficient an energy converter as are draft animals. It must always be remembered that while domestic animals and agricultural machines increase productivity per man, maximum productivity per acre is achieved only by intensive manual cultivation.

It is a sobering thought that the impoverished people of Asia, who today seldom go to sleep with their hunger completely satisfied, were once far more civilized and lived much better than the people of the West. And not so very long ago, either. It was the stories brought back by Marco Polo of the marvelous civilization in China which turned Europe's eyes to the riches of the East, and induced adventurous sailors to brave the high seas in their small vessels searching for a direct route to the fabulous Orient. The "wealth of the Indies" is a phrase still used, but whatever wealth may be there it certainly is not evident in the life of the people today.

Asia failed to keep technological pace with the needs of her growing populations and sank into such poverty that in many places man has become again the primary source of energy, since other energy converters have become too expensive. This must be obvious to the most casual observer. What this means is quite simply a reversion to a more primitive stage of civilization with all that it implies for human dignity and happiness.

Anyone who has watched a sweating Chinese farm worker strain at his heavily laden wheelbarrow, creaking along a cobblestone road, or who has flinched as he drives past an endless procession of human beasts of burden moving to market in Java—the slender women bent under mountainous loads heaped on their heads—anyone who has seen statistics translated into flesh and bone, realizes the degradation of man's stature when his muscle power becomes the only energy source he can afford. Civilization must wither when human beings are so degraded.

Where slavery represented a major source of energy, its abolition had the immediate effect of reducing energy consumption. Thus when this time-honored institution came under moral censure by Christianity, civilization declined until other sources of energy could be found. Slavery is incompatible with Christian belief in the worth of the humblest individual as a child of God. As Christianity spread through the Roman Empire and masters freed their slaves—in obedience to the teaching of the Church—the energy base of Roman civilization crumbled. This, some historians believe, may have been a major factor in the decline of Rome and the temporary reversion to a more primitive way of life during the Dark Ages. Slavery gradually disappeared throughout the Western world, except in its milder form of serfdom. That it was revived a thousand years later merely shows man's ability to stifle his conscience—

at least for a while—when his economic needs are great. Eventually, even the needs of overseas plantation economies did not suffice to keep alive a practice so deeply repugnant to Western man's deepest convictions.

It may well be that it was unwillingness to depend on slave labor for their energy needs which turned the minds of medieval Europeans to search for alternate sources of energy, thus sparking the Power Revolution of the Middle Ages which, in turn, paved the way for the Industrial Revolution of the 19th Century. When slavery disappeared in the West engineering advanced. Men began to harness the power of nature by utilizing water and wind as energy sources. The sailing ship, in particular, which replaced the slave-driven galley of antiquity, was vastly improved by medieval shipbuilders and became the first machine enabling man to control large amounts of inanimate energy.

The next important high-energy converter used by Europeans was gunpowder—an energy source far superior to the muscular strength of the strongest bowman or lancer. With ships that could navigate the high seas and arms that could outfire any hand weapon, Europe was now powerful enough to preempt for herself the vast empty areas of the Western Hemisphere into which she poured her surplus populations to build new nations of European stock. With these ships and arms she also gained political control over populous areas in Africa and Asia from which she drew the raw materials needed to speed her industrialization, thus complementing her naval and military dominance with economic and commercial supremacy.

When a low-energy society comes in contact with a high-energy society, the advantage always lies with the latter. The Europeans not only achieved standards of living vastly higher than those of the rest of the world, but they did this while their population was growing at rates far surpassing those of other peoples. In fact, they doubled their share of total world population in the short span of three centuries. From one sixth in 1650, the people of European stock increased to almost one third of total world population by 1950.

Meanwhile much of the rest of the world did not even keep energy sources in balance with population growth. Per capita energy consumption actually diminished in large areas. It is this difference in energy consumption which has resulted in an ever-widening gap between the one-third minority who live in high-energy countries and the two-thirds majority who live in low-energy areas.

These so-called underdeveloped countries are now finding it far more difficult to catch up with the fortunate minority than it was for Europe to initiate transition from low-energy to high-energy consumption. For one thing, their ratio of land to people is much less favorable; for another, they have no outlet for surplus populations to ease the transition since all the empty spaces have already been taken over by people of European stock.

Almost all of today's low-energy countries have a population density so great that it perpetuates dependence on intensive manual agriculture which alone can yield barely enough food for their people. They do not have enough acreage, per capita, to justify using domestic animals or farm machinery, although better seeds, better soil management, and better hand tools could bring some improvement. A very large part of their working population must nevertheless remain on the land, and this limits the amount of surplus energy that can be produced. Most of these countries must choose between using this small energy surplus to raise their very low standard of living or postpone present rewards for the sake of future gain by investing the surplus in new industries. The choice is difficult because there is no guarantee that today's denial may not prove to have been in vain. This is so because of the rapidity with which public health measures have reduced mortality rates, resulting in population growth as high or even higher than that of the high-energy nations. Theirs is a bitter choice; it accounts for much of their anti-Western feeling and may well portend a prolonged period of world instability.

How closely energy consumption is related to standards of living may be illustrated by the example of India. Despite intelligent and sustained efforts made since independence, India's per capita income is still only 20 cents daily; her infant mortality is four times ours; and the life expectance of her people is less than one half that of the industrialized countries of the West. These are ultimate consequences of India's very low energy consumption: one-fourteenth of world average; one-eightieth of ours.

Ominous, too, is the fact that while world food production increased 9% in the six years from 1945–51, world population increased by 12%. Not only is world population increasing faster than world food production, but unfortunately, increases in food production tend to occur in the already well-fed, high-energy countries rather than in the undernourished, low-energy countries where food is most lacking.

I think no further elaboration is needed to demonstrate the significance of energy resources for our own future. Our civilization rests upon a technological base which requires enormous quantities of fossil fuels. What assurance do we then have that our energy needs will continue to be supplied by fossil fuels: The answer is—in the long run—none.

The earth is finite. Fossil fuels are not renewable. In this respect our energy base differs from that of all earlier civilizations. They could have maintained their energy supply by careful cultivation. We cannot. Fuel that has been burned is gone forever. Fuel is even more evanescent than metals. Metals, too, are non-renewable resources threatened with ultimate extinction, but something can be salvaged from scrap. Fuel leaves no scrap and there is nothing man can do to rebuild exhausted fossil fuel reserves. They were created by solar energy 500 million years ago and took eons to grow to their present volume.

In the face of the basic fact that fossil fuel reserves are finite, the exact length of time these reserves will last is important in only one respect: the longer they last, the more time do we have, to invent ways of living off renewable or substitute energy sources and to adjust our economy to the vast changes which we can expect from such a shift.

Fossil fuels resemble capital in the bank. A prudent and responsible parent will use his capital sparingly in order to pass on to his children as much as possible of his inheritance. A selfish and irresponsible parent will squander it in riotous living and care not one whit how his offspring will fare.

Engineers whose work familiarizes them with energy statistics; far-seeing industrialists who know that energy is the principal factor which must enter into all planning for the future; responsible governments who realize that the well-being of their citizens and the political power of their countries depend on adequate energy supplies—all these have begun to be concerned about energy resources. In this country, especially, many studies have been made in the last few years, seeking to discover accurate information on fossil-fuel reserves and foreseeable fuel needs.

Statistics involving the human factor are, of course, never exact. The size of usable reserves depends on the ability of engineers to improve the efficiency of fuel extraction and use. It also depends on discovery of new methods to obtain energy from inferior resources at costs which can be borne without unduly depressing the standard of living. Estimates of future needs, in turn, rely heavily on population figures which must always allow for a large element of uncertainty, particularly as man reaches a point where he is more and more able to control his own way of life.

Current estimates of fossil fuel reserves vary to an astonishing degree. In part this is because the results differ greatly if cost of extraction is disregarded or if in calculating how long reserves will last, population growth is not taken into consideration; or, equally important, not enough weight is given to increased fuel consumption required to process inferior or substitute metals. We are rapidly approaching the time when exhaustion of better grade metals will force us to turn to poorer grades requiring in most cases greater expenditure of energy per unit of metal.

But the most significant distinction between optimistic and pessimistic fuel reserve statistics is that the optimists generally speak of the immediate future—the next twenty-five years or so—while the pessimists think in terms of a century from now. A century or even two is a short span in the history of a great people. It seems sensible to me to take a long view, even if this involves facing unpleasant facts.

For it is an unpleasant fact that according to our best estimates, total fossil fuel reserves recoverable at not over twice today's unit cost, are likely to run out at some time between the years 2000 and 2050, if present standards of living and population growth rates are taken into account. Oil and natural gas will disappear first, coal last. There will be coal left in the earth, of course. But it will be so difficult to mine that energy costs would rise to economically intolerable heights, so that it would then become necessary either to discover new energy sources or to lower standards of living drastically.

For more than one hundred years we have stoked ever growing numbers of machines with coal; for fifty years we have pumped gas and oil into our factories, cars, trucks, tractors, ships, planes, and homes without giving a thought to the future. Occasionally the voice of a Cassandra has been raised only to be quickly silenced when a lucky discovery revised estimates of our oil reserves upward, or a new coalfield was found in some remote spot. Fewer such lucky discoveries can be expected in the future, especially in industrialized countries where extensive mapping of resources has been done. Yet the popularizers of scientific news would have us believe that there is no cause for anxiety, that reserves will last thousands of years, and that before they run out science will have produced miracles. Our past history and security have given us the sentimental belief that the things we fear will never really happen—that everything turns out right in the end. But, prudent men will reject these tranquilizers and prefer to face the facts so that they can plan intelligently for the needs of their posterity.

Looking into the future, from the mid–20th Century, we cannot feel overly confident that present high standards of living will of a certainty continue through the next century and beyond. Fossil fuel costs will soon definitely begin to rise as the best and most accessible reserves are exhausted, and more effort will be required to obtain the same energy from remaining reserves. It is likely also that liquid fuel synthesized from coal will be more expensive. Can we feel certain that when economically recoverable fossil fuels are gone science will have learned how to maintain a high standard of living on renewable energy sources?

I believe it would be wise to assume that the principal renewable fuel sources which we can expect to tap before fossil reserves run out will supply only 7 to 15% of future energy needs. The five most important of these renewable sources are wood fuel, farm wastes, wind, water power, and solar heat.

Wood fuel and farm wastes are dubious as substitutes because of growing food requirements to be anticipated. Land is more likely to be used for food production than for tree crops; farm wastes may be more urgently needed to fertilize the soil than to fuel machines.

Wind and water power can furnish only a very small percentage of our energy needs. Moreover, as with solar energy, expensive structures would be required, making use of land and metals which will also be in short supply. Nor would anything we know today justify putting too much reliance on solar energy though it will probably prove feasible for home heating in favorable localities and for cooking in hot countries which lack wood, such as India.

More promising is the outlook for nuclear fuels. These are not, properly speaking, renewable energy sources, at least not in the present state of technology, but their capacity to ''breed'' and the very high energy output from small quantities of fissionable material, as well as the fact that such materials are relatively abundant, do seem to put nuclear fuels into a separate category from exhaustible fossil fuels. The disposal of radioactive wastes from nuclear power plants is, however, a problem which must be solved before there can be any widespread use of nuclear power.

Another limit in the use of nuclear power is that we do not know today how to employ it otherwise than in large units to produce electricity or to supply heating. Because of its inherent characteristics, nuclear fuel cannot be used directly in small machines, such as cars, trucks, or tractors. It is doubtful that it could in the foreseeable future furnish economical fuel for civilian airplanes or ships, except very large ones. Rather than nuclear locomotives, it might prove advantageous to move trains by electricity produced in nuclear central stations. We are only at the beginning of nuclear technology, so it is difficult to predict what we may expect.

Transportation—the lifeblood of all technically advanced civilizations—seems to be assured, once we have borne the initial high cost of electrifying railroads and replacing buses with streetcars or interurban electric trains. But, unless science can perform the miracle of synthesizing automobile fuel from some energy source as yet unknown or unless trolley wires power electric automobiles on all streets and highways, it will be wise to face up to the possibility of the ultimate disappearance of automobiles, trucks, buses, and tractors. Before all the oil is gone and hydrogenation of coal for synthetic liquid fuels has come to an end, the cost of automotive fuel may have risen to a point where private cars will be too expensive to run and public transportation again becomes a profitable business.

Today the automobile is the most uneconomical user of energy. Its efficiency is 5 percent compared with 23 percent for the Diesel-electric railway. It is the most ravenous devourer of fossil fuels, accounting for over half of the total oil consumption in this country. And the oil we use in the United States in one year took nature about 14 million years to create. Curiously, the automobile, which is the greatest single cause of the rapid exhaustion of oil reserves, may eventually be the first fuel consumer to suffer. Reduction in automotive use would necessitate an extraordinarily costly reorganization of the pattern of living in industrialized nations, particularly in the United States. It would seem prudent to bear this in mind in future planning of cities and industrial locations.

Our present known reserves of fissionable materials are many times as large as our net economically recoverable reserves of coal. A point will be reached before this century is over when fossil fuel costs will have risen high enough to make nuclear fuels economically competitive. Before that time comes we shall have to make great efforts to raise our entire body of engineering and scientific knowledge to a higher plateau. We must also induce many more young Americans to become metallurgical and nuclear engineers. Else we shall not have the knowledge or the people to build and run the nuclear power plants which ultimately may have to furnish the major part of our energy needs. If we start to plan now, we may be able to achieve the requisite level of scientific and engineering knowledge before our fossil fuel reserves give out, but the margin of safety is not large. This is also based on the assumption that atomic war can be avoided and that population growth will not exceed that now calculated by demographic experts.

War, of course, cancels all man's expectations. Even growing world tension just short of war could have far-reaching effects. In this country it might, on the one hand, lead to greater conservation of domestic fuels, to increased oil imports, and to an acceleration in scientific research which might turn up unexpected new energy sources. On the other hand, the resulting armaments race would deplete metal reserves more rapidly, hastening the day when inferior metals must be utilized with consequent greater expenditure of energy. Underdeveloped nations with fossil fuel deposits might be coerced into withholding them from the free world or may themselves decide to retain them for their own future use. The effect on Europe, which depends on coal and oil imports, would be disastrous and we would have to share our own supplies or lose our allies.

Barring atomic war or unexpected changes in the population curve, we can count on an increase in world population from two and one half billion today to four billion in the year 2000; six to eight billion by 2050. The United States is expected to quadruple its population during the 20th Century—from 75 million in 1900 to 300 million in 2000—and to reach at least 375 million in 2050. This would almost exactly equal India's present population which she supports on just a little under half of our land area.

It is an awesome thing to contemplate a graph of world population growth from prehistoric times—tens of thousands of years ago—to the day after tomorrow—let us say the year 2000 AD. If we visualize the population curve as a road which starts at sea level and rises in proportion as world population increases, we should see it stretching endlessly, almost level, for 99 percent of the time that man has inhabited the earth. In 6000 B.C., when recorded history begins, the road is running at a height of about 70 feet above sea level, which corresponds to a population of 10 million. Seven thousand years later—in 1000 AD.—the road has reached an elevation of 1,600 feet; the gradation now becomes steeper, and 600 years later the road is 2,900 feet high. During the short span of the next 400 years—from 1600 to 2000—it suddenly turns sharply upward at an almost perpendicular inclination and goes straight up to an elevation of 29,000 feet—the height of Mt. Everest, the world's tallest mountain.

In the 8,000 years from the beginning of history to the year 2000 AD. world population will have grown from 10 million to 4 billion, with 90 percent of that growth taking place during the last 5 percent of that period, in 400 years. It took the first 3,000 years of recorded history to accomplish the first doubling of population, 100 years for the last doubling, but the next doubling will require only 50 years. Calculations give us the astonishing estimate that one out of every 20 human beings born into this world is alive today.

The rapidity of population growth has not given us enough time to readjust our thinking. Not much more than a century ago our country—the very spot on which I now stand was a wilderness in which a pioneer could find complete freedom from men and from government. If things became too crowded—if he saw his neighbor's chimney smoke—he could, and often did, pack up and move west. We began life in 1776 as a nation of less than four million people—spread over a vast continent—with seemingly inexhaustible riches of nature all about. We conserved what was scarce—human labor—and squandered what seemed abundant—natural resources—and we are still doing the same today.

Much of the wilderness which nurtured what is most dynamic in the American character has now been buried under cities, factories and suburban developments where each picture window looks out on nothing more inspiring than the neighbor's back yard with the smoke of his fire in the wire basket clearly visible.

Life in crowded communities cannot be the same as life on the frontier. We are no longer free, as was the pioneer—to work for our own immediate needs regardless of the future. We are no longer as independent of men and of government as were Americans two or three generations ago. An ever larger share of what we earn must go to solve problems caused by crowded living—bigger governments; bigger city, state, and federal budgets to pay for more public services. Merely to supply us with enough water and to carry away our waste products becomes more difficult and expansive daily. More laws and law enforcement agencies are needed to regulate human relations in urban industrial communities and on crowded highways than in the America of Thomas Jefferson.

Certainly no one likes taxes, but we must become reconciled to larger taxes in the larger America of tomorrow.

I suggest that this is a good time to think soberly about our responsibilities to our descendents—those who will ring out the Fossil Fuel Age. Our greatest responsibility, as parents and as citizens, is to give America's youngsters the best possible education. We need the best teachers and enough of them to prepare our young people for a future immeasurably more complex than the present, and calling for ever larger numbers of competent and highly trained men and women. This means that we must not delay building more schools, colleges, and playgrounds. It means that we must reconcile ourselves to continuing higher taxes to build up and maintain at decent salaries a greatly enlarged corps of much better trained teachers, even at the cost of denying ourselves such momentary pleasures as buying a bigger new car, or a TV set, or household gadget. We should find—I believe—that these small self-denials would be far more than offset by the benefits they would buy for tomorrow's America. We might even—if we wanted—give a break to these youngsters by cutting fuel and metal consumption a little here and there so as to provide a safer margin for the necessary adjustments which eventually must be made in a world without fossil fuels.

One final thought I should like to leave with you. High-energy consumption has always been a prerequisite of political power.

The tendency is for political power to be concentrated in an ever-smaller number of countries. Ultimately, the nation which controls the largest energy resources will become dominant. If we give thought to the problem of energy resources, if we act wisely and in time to conserve what we have and prepare well for necessary future changes, we shall insure this dominant position for our own country.

LEAVE OF ABSENCE

By unanimous consent, leave of absence was granted to:

Mr. FATTAH (at the request of Mr. HOYER) for today on account of personal reasons.

Mr. EVERETT (at the request of Mr. BOEHNER) for today after 11:00 a.m. on account of a family matter.

Mr. BRADY of Texas (at the request of Mr. BOEHNER) for today after 2:00 p.m. on account of illness.

Mr. LUCAS (at the request of Mr. BOEHNER) for today on account of illness in the family.

SPECIAL ORDERS GRANTED

By unanimous consent, permission to address the House, following the legislative program and any special orders heretofore entered, was granted to:

(The following Members (at the request of Mr. HODES) to revise and extend their remarks and include extraneous material:)

Mr. GEORGE MILLER of California, for 5 minutes, today.

Mr. PALLONE, for 5 minutes, today.

Ms. WOOLSEY, for 5 minutes, today.

Ms. WATERS, for 5 minutes, today.

Mr. DEFAZIO, for 5 minutes, today.

Mr. HODES, for 5 minutes, today.

Mr. SCHIFF, for 5 minutes, today.

Mrs. MCCARTHY of New York, for 5 minutes, today.

Mr. MILLER of North Carolina, for 5 minutes, today.

Ms. EDDIE BERNICE JOHNSON of Texas, for 5 minutes, today.

Ms. JACKSON-LEE of Texas, for 5 minutes, today.

(The following Members (at the request of Mr. KIRK) to revise and extend their remarks and include extraneous material:)

Mr. JONES of North Carolina, for 5 minutes, January 29, 30 and 31.

EXTENSION OF REMARKS

By unanimous consent, permission to revise and extend remarks was granted to:

Mr. BARTLETT of Maryland, and to include therein extraneous material, notwithstanding the fact that it exceeds two pages of the RECORD and is estimated by the Public Printer to cost $1,620.

ENROLLED BILLS SIGNED

Mrs. Haas, Clerk of the House, reported and found truly enrolled a bill of the House of the following title, which was thereupon signed by the Speaker:

H.R. 475. An act to revise the composition of the House of Representatives Page Board to equalize the number of members representing the majority and minority parties and to include a member representing the parents of pages and a member representing former pages, and for other purposes.

ADJOURNMENT

Mr. BARTLETT of Maryland. Mr. Speaker, pursuant to House Concurrent Resolution 41, 110th Congress, I move that the House do now adjourn.

The motion was agreed to.

The SPEAKER pro tempore. Pursuant to House Concurrent Resolution 41, 110th Congress, the House stands adjourned until 2 p.m. on Monday, January 29, 2007.

Thereupon (at 5 o'clock and 50 minutes p.m.), pursuant to House Concurrent Resolution 41, the House adjourned until Monday, January 29, 2007, at 2 p.m.

EXECUTIVE COMMUNICATIONS, ETC.

Under clause 8 of rule XII, executive communications were taken from the Speaker's table and referred as follows:

407. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-646, ''National Capital Revitalization Corporation Asset Transfer Clarification Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

408. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-647, ''Community Access to Health Care Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

409. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-648, ''Closing of a Portion of a Public Alley in Square 85, S.O. 06-8859, Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

410. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-649, ''Film DC Economic Incentive Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

411. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-650, ''Closing of a Public Alley in Square 375, S.O. 06-656, Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

412. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-651, ''Domestic Partnership Joint Filing Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

413. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-652, ''Anti-Deficiency Act Revision Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

414. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-653, ''Second Techincal Amendments Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

415. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-654, ''Mayor and Council Compensation Adjustment and Compensation Advisory Commission Establishment Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

416. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-655, ''Shelter Monitoring and Emergency Assistance Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

417. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-630, ''Mandatory Juvenile Public Safety Notification Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

418. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-629, ''Protection from Discriminatory Eviction for Victims of Domestic Violence Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

419. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-628, ''Jury Trial Improvements Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

420. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-639, ''Closing of Portions of a Public Alley System in Square 700, S.O. 06-3582, Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

421. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-640, ''Closing of a Public Alley in Squares 739, the Closure of Streets, the Opening and Widening of Streets, and the Dedication of Land for Street Purposes (S.O. 06-221), Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

422. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-641, ''Walter E. Washington Convention Center Designation Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

423. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-642, ''Use of Closed Circuit Television to Combat Crime Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

424. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-643, ''Rebuttable Presumption to Detain Robbery and Handgun Violation Suspects Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

425. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-644, ''Special Purpose Financial Captive Authorization Amendment Act of 2006,'' pursuant to D.C. Code section 1-233(c)(1); to the Committee on Oversight and Government Reform.

426. A letter from the Chairman, Council of the District of Columbia, transmitting a copy of D.C. ACT 16-645, ''Captive Insurance